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a conductive material formed on the titanium aluminide layer.

27. (Twice Amended) A semiconductor device, comprising:

an aluminum layer over a substrate;

a dielectric layer on the aluminum layer;

an antireflective coating over said dielectric layer;

a via hole extending through the dielectric layer and said antireflective coating to a surface of the aluminum layer;

a preformed titanium aluminide layer lining at least a bottom of the via hole;

a titanium nitride layer substantially free of through cracks formed on the titanium aluminide layer;

a conductive plug material on the titanium nitride layer; and

a metallic layer on the dielectric layer and electrically connected to the plug material.

28. (Twice Amended) A semiconductor memory device, comprising:

a memory circuit region in a semiconductor substrate;

a first dielectric layer over the memory circuit region;

a first metallic layer over the first dielectric layer;

a contact interconnect between the first metallic layer and the substrate;

a second dielectric layer on the first metallic layer;

an antireflective coating over said second dielectric layer;

a via hole extending through the second dielectric layer and the antireflective coating to a surface of the second metallic layer;

a preformed titanium aluminide layer lining at least a bottom of the via hole, said preformed titanium aluminide layer being volume reduced;

a titanium compound layer formed on the titanium aluminide layer;

a conductive plug material on the titanium compound layer; and

a second metallic layer on the second dielectric layer and electrically connected to the plug material.

*Sub C<sup>2</sup>*

33. (Twice Amended) A memory module, comprising:

a substrate comprising a circuit board;

a plurality of memory chips mounted on the substrate and connected to form a memory circuit, wherein one or more of the memory chips comprise a random access memory (RAM) fabricated on a semiconductor substrate comprising:

a first metallic layer over a substrate;

a dielectric layer on the first metallic layer;

an antireflective coating over the dielectric layer;

a via hole extending through the dielectric layer and the antireflective coating to a surface of the first metallic layer;

a preformed titanium aluminide layer lining at least a bottom of the via hole;

a titanium compound layer formed on the titanium aluminide layer;

a conductive plug material formed on the titanium compound layer; and

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a second metallic layer on the dielectric layer and electrically connected to the plug material; and

an edge connector along one edge of the substrate which is wired to said memory circuit.

34. (Twice Amended) A memory module, comprising:

a substrate comprising a circuit board;

a plurality of memory chips mounted on the substrate and connected to form a memory circuit, wherein one or more of the memory chips comprise a random access memory (RAM) fabricated on a semiconductor substrate comprising:

a metallic layer over a substrate;

a dielectric layer on the metallic layer;

an antireflective coating over said dielectric layer;

a via hole extending through the dielectric layer and said antireflective coating to a surface of the metallic layer;

a preformed titanium aluminide layer lining at least a bottom of the via hole; and

a conductive material formed on the titanium aluminide layer; and  
an edge connector along one edge of the substrate which is wired to said memory circuit.

35. (Twice Amended) A memory module, comprising:

a substrate comprising a circuit board;

a plurality of memory chips mounted on the substrate and connected to form a memory circuit, wherein one or more of the memory chips comprise a random access memory (RAM) fabricated on a semiconductor substrate comprising:

an aluminum layer over a substrate;

a dielectric layer on the aluminum layer;

an antireflective coating over said dielectric layer;

a via hole extending through the dielectric layer and the antireflective coating to a surface of the aluminum layer;

a preformed titanium aluminide layer lining at least a bottom of the via hole, said preformed titanium aluminide layer being volume reduced;

a titanium nitride layer substantially free of through cracks formed on the titanium aluminide layer;

a conductive plug material on the titanium nitride layer; and

a metallic layer on the dielectric layer and electrically connected to the plug material; and

an edge connector along one edge of the substrate which is wired to said memory circuit.

36. (Twice Amended) A memory module, comprising:

a substrate comprising a circuit board;

a plurality of memory chips mounted on the substrate and connected to form a memory circuit, wherein one or more of the memory chips comprise a random access memory (RAM) fabricated on a semiconductor substrate comprising:

a memory circuit region in a semiconductor substrate;

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- a first dielectric layer over the memory circuit region;
- a first metallic layer over the first dielectric layer;
- a contact interconnect between the first metallic layer and the substrate;
- a second dielectric layer on the first metallic layer;
- an antireflective coating over the second dielectric layer;
- a via hole extending through the second dielectric layer and the antireflective coating to a surface of the second metallic layer;
- a preformed titanium aluminide layer lining at least a bottom of the via hole, said preformed titanium aluminide layer being volume reduced;
- a titanium compound layer formed on the titanium aluminide layer;
- a conductive plug material on the titanium compound layer; and
- a second metallic layer on the second dielectric layer and electrically connected to the plug material; and
- an edge connector along one edge of the substrate which is wired to said memory circuit.

37. (Twice Amended) A computer system, comprising:

a processor; and

a random access memory (RAM) fabricated on a semiconductor chip communicating with the processor and comprising:

- a first metallic layer over a substrate;
- a dielectric layer on the first metallic layer;
- an antireflective coating over said dielectric layer;
- a via hole extending through the dielectric layer and the antireflective coating to a surface of the first metallic layer;
- a preformed titanium aluminide layer lining at least a bottom of the via hole;
- a titanium compound layer formed on the titanium aluminide layer;
- a conductive plug material formed on the titanium compound layer; and
- a second metallic layer on the dielectric layer and electrically connected to the plug material.

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38. (Twice Amended) A computer system, comprising:  
a processor; and  
a random access memory (RAM) fabricated on a semiconductor chip  
communicating with the processor and comprising:  
a metallic layer over a substrate;  
a dielectric layer on the metallic layer;  
an antireflective coating over the dielectric layer;  
a via hole extending through the dielectric layer and the antireflective coating  
to a surface of the metallic layer;  
a preformed titanium aluminide layer lining at least a bottom of the via hole;  
and  
a conductive material formed on the titanium aluminide liner.
39. (Twice Amended) A computer system, comprising:  
a processor; and  
a random access memory (RAM) fabricated on a semiconductor chip  
communicating with the processor and comprising:  
an aluminum layer over a substrate;  
a dielectric layer on the aluminum layer;  
an antireflective coating over the dielectric layer;  
a via hole extending through the dielectric layer and the antireflective coating  
to a surface of the aluminum layer;  
a preformed titanium aluminide layer lining at least a bottom of the via hole,  
said preformed titanium aluminide layer being volume reduced;  
a titanium nitride layer substantially free of through cracks formed on the  
titanium aluminide layer;  
a conductive plug material on the titanium nitride layer; and  
a metallic layer on the dielectric layer and electrically connected to the plug  
material.

40. (Twice Amended) A computer system, comprising:  
a processor; and  
a random access memory (RAM) fabricated on a semiconductor chip  
communicating with the processor and comprising:
- a memory circuit region in a semiconductor substrate;
  - a first dielectric layer over the memory circuit region;
  - a first metallic layer over the first dielectric layer;
  - a contact interconnect between the first metallic layer and the substrate;
  - a second dielectric layer on the first metallic layer;
  - an antireflective coating over the second dielectric layer;
  - a via hole extending through the second dielectric layer and the antireflective coating to a surface of the second metallic layer;
  - a preformed titanium aluminide layer lining at least a bottom of the via hole, said preformed titanium aluminide layer being volume reduced;
  - a titanium compound layer formed on the titanium aluminide layer;
  - a conductive plug material on the titanium compound layer; and
  - a second metallic layer on the second dielectric layer and electrically connected to the plug material.

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